PB-222 835

NEW YORK, WISCONSIN AND VIRGINIA POINT SOURCE EMISSION INVENTORY

IBM Federal Systems Division

Prepared for:

Environmental Protection Agency

1972

DISTRIBUTED BY:

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National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

APTD-1559
PB 222 835

TECHNICAL SERVICES

BASIC ORDERING AGREEMENT NO. 68-02-0043

TASK ORDER NUMBER 13

NEW YORK, WISCONSIN AND VIRGINIA POINT SOURCE EMISSION INVENTORY

FINAL REPORT

PREPARED FOR THE ENVIRONMENTAL PROTECTION AGENCY

DURHAM, NORTH CAROLINA 27711

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Springfield VA 22151

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GAITHERSBURG, MARYLAND

BIBLIOGRAPHIC DATA SHEET	1. Report No. APTD-1559	2.	3. Recipient's Accession No. PB-227 875
4. Title and Subtitle New York, Wisconsin and Virginia Point Source Emission Inventory			5. Report Date 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Federal Systems Division International Business Machines Corporation 18100 Frederick Pike Gaithersburg, Maryland			10. Project/Task/Work Unit No. Order No. 13 11. ~~Contract/Grant No.~~ Basic Ordering Agreement No. 68-02-0043
12. Sponsoring Organization Name and Address ENVIRONMENTAL PROTECTION AGENCY Durham, North Carolina 27701			13. Type of Report & Period Covered Final Technical Services 14.

15. Supplementary Notes

16. Abstracts
A task order is described for which the objectives were to develop point source emission inventories for the States of Virginia, Wisconsin and New York. These inventories to be prepared in accordance with Section 4 of "Guide for Compiling a Comprehensive Emission Inventory," published by the Environmental Protection Agency and dated June, 1972. The results of this task were to be provided to EPA in the National Emission Data System (NEDS) format. The scope of this task order was to review, correct and complete partially completed NEDS data forms for each state as provided to the contractor by EPA. When necessary and approved by the appropriate government agency contacts were made with the state and local government agencies and with representatives of the emitting sources to obtain the available data required for completion of the NEDS data forms.

17. Key Words and Document Analysis. 17a. Descriptors
Air Pollution
Emission
Inventory
Sources
State government
Data collection
Boilers
Fuels
Petroleum refining

17b. Identifiers/Open-Ended Terms
Point sources
National Emission Data System (NEDS)
Federal facilities
New York
Wisconsin
Virginia

17c. COSATI Field/Group 13B

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Unlimited	UNCLASSIFIED	16
	20. Security Class (This Page) UNCLASSIFIED	22. Price $3.00

FORM NTIS-35 (REV. 3-72)

THIS FORM MAY BE REPRODUCED

USCOMM-DC 14952-P72

SECTION I

Purpose and Scope

The objectives of this task order were to develop point source emission inventories for the States of Virginia, Wisconsin and New York. These inventories to be prepared in accordance with Section 4 of "Guide for Compiling a Comprehensive Emission Inventory," published by the Environmental Protection Agency and dated June, 1972. The results of this task to be provided to EPA in the National Emission Data System (NEDS) format. The scope of this task order was to review, correct and complete partially completed NEDS data forms for each state as provided to the contractor by EPA. When necessary and approved by the appropriate government agency contacts were made with the state and local government agencies and with representatives of the emitting sources to obtain the available data required for completion of the NEDS data forms.

Assumptions

The following assumptions or ground rules were used in conjunction with Chapters 4 and 5 of the NEDS Manual in the preparation of the New York, Virginia and Wisconsin NEDS forms:

1. Boiler Data

Boilers shall be coded one per NEDS form unless in the judgement of the analyst excessive data would result by not combining several small boilers. When boilers are combined:

(a) The boiler capacity indicated shall be the total capacity for all boilers combined.

(b) Fuel amounts are to be added to provide one total for each fuel type.

(c) When multiple stacks are used, the stack data will be averaged and entered as such.

Boilers combining unusual liquid waste with fuel oil will have the liquid waste identified using the new SCC code provided by EPA.

2. Process Fuels

Process fuel use not specifically identifiable to a specific process will be coded on a NEDS form using a 'C' indicating the source, a general process IPP code, a zero (0) in the boiler capacity and the appropriate generalized combustion SCC code.

Process fuel known to be associated with a particular process but separately vented is to be coded on a separate NEDS form with appropriate IPP process and SCC codes used. When it is indicated that part of the process heat is used for space heating and the emissions are small compared to the process emissions, the need to separate space heating can be ignored.

When fuel use is not identified as being for a boiler or used in a process, the following technique is to be used.

(a) If the industry is not known to use a significant heating in its process, the fuel used will be considered as consumed in boilers.

(b) If the industry is one which uses significant heating in its process, such as the refining, cement and asphalt industries, the fuel used will be considered as used in combustion sources.

3. Process Combustion Emissions

For those pollutants identified as being emitted from the associated process, an emission factor of zero (0) will be assumed for the fuel combustion emissions.

For those pollutants not emitted by the associated process, emission factors will be applied using the factors provided for the most similar boiler. The results of these calculations will be entered in the emission estimate fields of Card 4. Appropriate corrections for control devices will be made, if applicable.

4. The dryer used in asphalt batching will be assumed to be a rotary dryer, unless specified otherwise, and the appropriate SCC code will be used. The SCC code for 'other sources' will be appended and an additional emission factor of 10 pounds per ton of particulates uncontrolled will be used.

5. Petroleum Refineries

EPA will provide an SCC code for the Internal Combustion Engine/ Compressor used in petroleum refineries.

Generalized leakage emissions from petroleum refineries shall be assumed to be emitted at a plume height of zero (0). The height of emissions from storage tanks will be left blank unless the average height of the tanks is known.

6. Zero Emission Sources (non-Federal)

Any source within a facility meeting the NEDS criteria, which emits to the atmosphere basically zero tons per year of each of the pollutants may be excluded from the inventory. This includes sources which achieve low emissions through the use of pollution control devices.

7. Federal Facilities

NEDS forms will be prepared for all federal facilities included on the listings provided by EPA.

The following assumptions for the Scope of Work of this Task Order Number 13 were also made:

Assumptions:	N.Y. Comb.	N.Y. Proc.	Virginia	Wisconsin
Number of Facilities	300	200	150	200
Number of forms	900	1000	600	400
Estimated Percent Complete	50	0	60	40
Phone Recontacts	150		80	100
Facility Visits	30		16	20

SECTION II

Approach

General

To reach the objectives as stated in the previous section, the following steps were planned for application to the three states:

- Plan and arrange for initial meetings with each of the state air pollution control agencies and EPA representation to:
  - a) Explain the purpose of the task order and the relationship among EPA, the contractor and the state.
  - b) Discuss the NEDS system, its purpose and potential use.
  - c) Determine the size of the job, the extent of data availability, the form and locations of the available data.
  - d) Identify the content of the available data in relation to NEDS requirements and identify, when possible, methods for obtaining data not presently available in the state.
  - e) Set up a working relationship with the state; identify points of contact; develop a tentative project schedule; determine the location of the work (at the state or in Gaithersburg) and arrange for exchange of data.
- Acquire and correlate materials as available from EPA for each of the three states as follows:
  - a) U.S. Geological Survey Maps
  - b) NEDS forms as partially completed by EPA
  - c) Federal Power Commission Form #67's
  - d) Federal Facilities Data print outs
  - e) Blank NEDS Point Source Input forms.

SECTION III

Accomplishments/Results

Meetings

Kick off meetings were held with each of the states on the following dates:

Virginia - November 10, 1972
New York State - November 20, 1972
Wisconsin - November 27, 1972
New York City - December 14, 1972

Meeting Summaries

- Virginia - The meeting was held in Richmond at the office of the Air Pollution Control Section of the Virginia Department of Natural Resources. In attendance were:

  Mr. I. Kaplan, Mr. J. Gleason - IBM
  Mr. Charles O. Mann - EPA
  Mr. William Erskin - Va. APC

  It was determined at this meeting that the major part of this effort would have to be performed in the Va. APC office since the data was available only in the agency's files and could not be removed or forwarded to IBM Gaithersburg. Arrangements were therefore made to perform this work at Richmond beginning November 29, 1972.

- New York - The meeting was held in Albany at the office of the N.Y. APC office. In attendance were:

  Mr. I. Kaplan - IBM
  Mr. Dan Barolo and Mr. Gordon Howe - N.Y. APC

  It was determined at this meeting that:

  a) The data in New York State has been decentralized and presently is located at the nine New York State regional offices. There were specific items of information which are not available in Albany and therefore would require work on site in

each New York State region. One specific item critical to NEDS is the process identification data. This data is required to specify the SCC code and IPP process code required by NEDS.

b) There were apparently many more sources which meet NEDS criteria in New York State than were identified by the partially completed NEDS forms. In addition, the combustion and incineration data is maintained separate from the process data for each source and must be combined to determine whether a source meets NEDS criteria. Although the process data is available from a computer data base, the combustion data has not been computerized. There are presently 15,000 industrial sources in the file with approximately 20,000 incinerators and boilers not in the file. Data was requested from the State in an attempt to determine the number of the sources which meet NEDS requirements but were not identified by the partially completed NEDS forms.

o New York City - The meeting was held at the offices of the New York City Air Pollution Control Department in New York City. In attendance were:

Mr. J. J. Gleason - IBM
Mr. A. Salpeter - EPA, Region II
Dr. E. Ferrand - New York City
Mr. H. J. Prass - New York City

It was determined that Mr. Prass was responsible for the New York City emission inventory and would be the point of contact for future efforts. The following summarizes the key points of the meeting:

a) Source data was available in questionnaire form at the offices of the New York City Air Pollution Control Department

b) There are three types of questionnaires used by the City, one each for boilers, processes and incinerators.

c) There are approximately 30 large facilities (emitting over 100 tons per year) in New York City.

d) There are approximately 700 facilities meeting the definition of Appendix C to the 14 August 1971 Federal register. Of these there are approximately 100 small foundries and 600 small wood processing plants.

e) Arrangements for performance of the emission inventory analysis was deferred pending the results of the Virginia and Wisconsin effort.

o Wisconsin - The meeting was held at the offices of the Air Pollution Control Section, Wisconsin Department of Natural Resources in Madison. In attendance were:

Mr. J. Myers - IBM
Mr. R. Dieterle, Mr. R. Mixdorf - EPA (Region V)
Mr. D. Evans (Chief of Section) - Wisconsin APC
Mr. W. Rock, Mr. D. Packard - Wisconsin APC

It was determined at this meeting that Mr. Rock was the leader of the Wisconsin Emission Inventory effort. Mr. Rock with a programmer (not identified) had developed and implemented their emission inventory system. He made available samples of their latest inventory run. The discussion at the meeting centered around the capabilities of this inventory listing to satisfy the requirements of NEDS.

Points discussed and conclusions reached were as follows:

(1) The most obvious lack of data was UTM locations coordinates.

(2) SCC numbers were not included. However, SIC codes were entered and processes and/or burner types were described in enough detail to make selection of SCC codes.

(3) Combustion emissions were calculated using factors from the EMFAC Handbook. Process emissions were derived using either EMFAC Handbook factors or factors derived by the APC section engineers; however, process factors were shown on the printout.

(4) Control equipment efficiency was usually given as determined by (a) manufacturer's design, (b) source estimate, and (c) as estimated by DNR (APC) engineers.

(5) Emissions of all five pollutants were totalled individually for all point sources in each facility/plant.

(6) Data in the inventory is nearly all 1971 data; however, year of data is stated for each facility.

(7) Mr. Rock would be correcting input and system function errors that were detected in the present run and would rerun the inventory listing again and forward a copy to us immediately thereafter.

(8) The system did <u>not</u> yet have a capability to select and list only those facilities emitting over 100 tons of any one pollutant; therefore, IBM would have to manually select these from the listing. The summary totals for each facility should considerably facilitate this task.

(9) It will be necessary to correlate and collate the NEDS forms prepared by Chuck Mann with the facilities and sources shown on the listing, after which we can proceed with correcting and adding to the NEDS forms.

(10) Although Wisconsin uses a different numbering system for their regions, the regions conform with the EPA established AQCR's; thus, only a cross reference table using the SAROAD table as a basis must be developed to make the translation.

(11) The Wisconsin facility questionaire is a five part form (6 sheets). Blank copies of these sheets were provided. The facility completed questionnaires are all retained at the headquarters (Madison) office.

(12) Mr. Rock estimated about 2000 pages in the complete computer listed inventory. He also stated that all data contained on the questionnaires had been abstracted and input to the Wisconsin computer emission inventory file.

Completed Data Statistics

NEDS Point Source Input forms were completed and the original and one copy of each were forwarded to NADB (EPA-Durham) as follows:

- Virginia - 859 forms on January 22, 1973
- Wisconsin- 887 forms on March 15, 1973

The above totals include forms derived from data available from FPC 67 forms and from Federal Facilities listings as furnished by EPA.

- In addition 79 NEDS forms were completed for power plants in New York from FPC 67 forms. These forms were not sent to NADB, but rather are being held pending completion of the New York point source data: (See paragraph "Discussion of Scope" which follows, for further explanation.)

NEDS Data Processing - by State

- Virginia - The point source data for facilities in this state was derived from registration forms on file at Richmond, Federal Power Commission Form 67's and the EPA provided listings of Federal Facilities. This effort was performed on site in a two-week period from November 29 through December 8, 1972.

  UTM coordinates were available on approximately 90 percent of the facilities. The remainder was plotted using U.S. Geological Survey maps furnished by EPA and local maps from the Virginia APC. This plotting of facilities locations along with derivation of power plant, and Federal Facility data was performed at Gaithersburg.

  Completion of the Virginia task included review, checking and reproducing two copies of all NEDS Point Source forms.

  Completion of Federal Facilities data was delayed until the Federal Facilities Location code booklet was received. The SAROAD and AQCR codes for these facilities could not be derived except by use of this booklet.

The partially completed NEDS forms furnished by EPA at the start of this task were found to be practically of no value in reducing the total task effort for Virginia. This was as a result of the Virginia APC having updated its inventory with 1971 data whereas the EPA furnished forms had been derived from 1970 (or earlier) data.

- Wisconsin - Except for Federal Facilities and power plants (taken from FPC 67's), the point source data for facilities was derived from the listings out put from the Wisconsin APC Emission Inventory System. The first set of listings was received at Gaithersburg December 18, 1972. Missing from this set was the data on facilities in AQCR 239(Milwaukee and Racine). The listings were analyzed, over 100-ton facilities defined, and NEDS forms were derived for all identified points in the selected facilities. Since neither UTM coordinates nor latitude-longitude values were available in the listings sheet, maps of major cities in Wisconsin were requested and later received from the state APC. Using these maps and the U.S. Geologic Survey maps provided by EPA UTM coordinates were determined for all but five of the industrial sources in Wisconsin. These five sources were identified to the Wisconsin Department of Natural Resources for assistance.

  In some cases, the Geologic Survey maps did not contain UTM tick marks. In these cases, the latitude and longitude of the source location were determined and converted to UTM coordinates using an available conversion program.

  UTM coordinates were also determined for the larger Federal Facilities.

  The Wisconsin data for AQCR 239 arrived in early February along with revised printouts for the other AQCR's. The data for AQCR 239 was analyzed and NEDS data forms completed. The updated printouts for the other AQCR's were compared against the developed NEDS data forms. Where differences were observed, the NEDS forms were changed to agree with the most recent data. The number of changes required proved significant. The added effort was estimated

to be equivalent to processing an extra 25-35% NEDS forms.

As was found in Virginia, the partially completed NEDS forms furnished by EPA, were of no benefit to this task effort since Wisconsin's emission inventory had been updated with 1971/1972 data.

- New York - The initial and succeeding visits to Albany and New York City and a number of telephone conversations/discussions produced the following facts which radically altered the original estimate of the N.Y. task size and required effort:

  a) The data in New York State had been decentralized and is located at the nine New York State regional offices. There were specific items of information which were not available in Albany and therefore would require work on site in each New York State region. One specific item critical to NEDS is the process identification data. This data would have to be collected on site.

  b) There were apparently many more sources which meet NEDS criteria than were identified by the partially completed NEDS forms.

  c) The combustion and incineration data was maintained separate from the process data for each source and would need to be combined to determine whether a source meets NEDS criteria.

  d) Process data was available from a computer data base; however, the combustion data had not been computerized. There are presently 15,000 industrial sources in the file with approximately 20,000 incinerators and boilers not in the file. Data was requested from the State in an attempt to determine the number of the sources which meet NEDS requirements but were not identified by the partially completed NEDS forms from EPA.

FPC 67 forms were analyzed and data to complete 79 NEDS Point Source Input forms was derived before termination of effort on the New York State task occurred.

Discussion of Work Scope

Upon receipt of the data from New York State to be used in identifying 100-ton sources and re-estimate the size of this part of Task 13, the following factors became apparent:

(a) There are approximately 275 process sources in N.Y. State emitting over 100 tons and another 100 sources emitting between 50 and 100 tons.

(b) Although N. Y. State-furnished data was not adequate to determine the number of combustion sources over 100 tons, EPA-furnished data indicated that the combination of combustion sources with the process sources identified in (a) above would result in a probable sum of 3000 NEDS Point Source forms to adequately inventory N. Y. State over 100-ton sources.

(c) The N. Y. inventory data is contained in files located at 9 regional offices, thereby requiring on site effort at each office.

The above information was relayed to EPA Durham accompanied by details of effort already expended or required to complete the Virginia and Wisconsin inventories and the Federal Facilities inventories as well. EPA, by memo from Mr. C. O. Mann dated January 9, 1973, directed completion of the Virginia, Wisconsin and Federal Facilities inventories with whatever remaining effort being applied to the New York inventory work.

Summary

NEDS Point Source Input forms were completed for all emission points identified as meeting the EPA criteria for inclusion in the states of Virginia and Wisconsin.

Seventy nine (79) NEDS Point Source Input forms were completed for power plants in New York State as derived from FPC 67 forms provided by EPA. No other inventory work was performed on New York data.

An estimate of additional effort to complete the New York inventory has been discussed with EPA. It is expected that this effort will take the form of a new Task and not an addition to Task 13.